

# Amateur Television Journal

**October, 2024**  
**2ed edition, issue #173**

**BATVC web site: [www.kh6htv.com](http://www.kh6htv.com)**

**ATN web site: [www.atn-tv.com](http://www.atn-tv.com)**



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## **Controversy Continues on the issue of NBTV on 10 meters**

*I obviously stirred things up with my initial inquiry to the ARRL about doing narrow-band ATV on 10 meter band. As we reported in the last issue, the major forum for discussion of this issue is the yahoo DATV group site ( <https://groups.io/g/digitalatv/> ). As a result, the ARRL has posted some more information on it, which I am here reprinting. --- kh6htv, editor*

**Reply from ARRL, 1 Oct. 2024** --- I'm the same John McAuliffe that wrote the ARRL response to the initial inquiry, and was just sent the ATV newsletter which recently made me aware of this fruitful discussion being had. I've read through the replies and the arguments supporting these positions. To clarify a few things, 97.305 goes into authorized emission types and incorporates 97.307 by reference. Each paragraph of 307 Subsection f lists a different standard, and each standard is tied to the frequency table in 305 (c). For the 10 meter band it looks like this

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307, paragraph(s):
(xvii) 10 m	28.0-28.3 MHz	RTTY, data	(f)(3).
(xviii) 10 m	28.3-28.5 MHz	Phone, image	(f)(1), (2), (10).
(xix) 10 m	28.5-29.0 MHz	Phone, image	(f)(1), (2).
(xx) 10 m	29.0-29.7 MHz	Phone, image	(f)(2).

In relevant part, depending on the band segment, Paragraphs 1, 2, and 10 apply based on where in the band you are operating. 10 deals with technician and novice class phone and CW privileges on 10m, paragraph 1 deals with the modulation index of phase shift keying modes, and paragraph 2 deals with "non phone", phone, and image standards which ATV would fall under traditionally. The rule says that it can't exceed the bandwidth of a communications quality emission of the same modulation type, and then places a blanket limit of a "communications quality A3E emission" on both phone and image transmissions. There is some vagueness here since the bandwidth is not ever defined under part 97 but under part 90.209 there is a rule saying that A3E emissions shall not exceed 8 kHz. I understand that we are not a part 90 service but it is the best definition I have for a communications quality AM transmission bandwidth and is probably the most generous reading of the rules I can give.

Now when you get into what defines bandwidth and if say 1000, 1 Hz carriers spaced across a 100 kHz wide spectrum is a 1kHz transmission or a 100 kHz transmission, that falls squarely under the definition of a spread spectrum (SS) transmission which is dealt with under part 97.311 and under 97.307(f)(6) by reference, the limit is 100 kHz, there is a 10 watt power restriction, and it is allowed on 1.25m and up per 97.305(c).

Wavelength band	Frequencies	Emission types authorized	Standards see § 97.307, paragraph(s):
(iii) 2 m	144.1-148.0 MHz	RTTY, data, test MCW, phone, image, RTTY, data, test	(f)(2), (5), (8).
(iv) 1.25 m	219-220 MHz	Data	(f)(13).
(v) 1.25m	222-225 MHz	RTTY, data, test MCW, phone, SS, image	(f)(2), (6), (8).
(5) UHF: (i) 70 cm	Entire band	MCW, phone, image, RTTY, data, SS, test	(f)(6), (8).

As for the enforcement question, that I cannot speak to. If someone complains though, we (the ARRL) will be trying to reach out to resolve it before the FCC does in all likelihood, and I enjoy being able to say that I've never had to deal with an amateur complaining that another amateur is breaking the rules. It is fairly uncommon that the FCC takes action against any amateur station, and some things like the output power used by an amateur station are difficult to prove. Still the question was if ATV of the proposed bandwidth is allowed under the rules as they exist today and I'm confident that the answer is no. Open for any questions.

John McAuliffe, KD2ZWN, Digital RF Engineer, ARRL Lab

**Editor's Note:** *As you can imagine, this reply for the ARRL did not squelch the discussion on the DATV Groups web site ( <https://groups.io/g/digitalatv/> ), but fueled it even more. The consensus then seemed to be towards requesting the ARRL to petition the FCC to allow a sub-band on 10 meters in the unused region for up to 100 kHz band-width experimenting with digital modes, including narrow-band ATV. We would endorse this approach.*



## ATV at BARC Fest - 2024

Every fall, the Boulder Amateur Radio Club (BARC) sponsors a ham radio swapfest. It is held in the exhibit hall at the Boulder County Fairgrounds in Longmont. This year it was on Sunday, October 6th. For the past three years, our own YL-ATVer, Debbie, WB2DVT, has been the chair-lady and sparkplug driving the swapfest for BARC.



Debbie has reported it was the biggest yet for her. This year she sold over 100 display tables to vendors. The number of paid attendees was almost 400. Still doing the final books, but it appears that the income to BARC this year was the best in the past 20 years.

BARC's swap-fest is the home of the original "Gift Bag Door Prize." Each of six door prizes was a tote bag filled with one piece of hardware, miscellaneous gift certificates, swag (hats, t-shirts, buttons, stickers) and a treat. Every half hour a gift bag was given out with each bag increasing in value until the grand prize is given at noon. ( <https://barcw0dk.wordpress.com/2024-barcfest-prizes/> ) Prize donors included: ARRL, Arrow Antennas, Bioenno Power, Easy Way Ham Books, DX Engineering, Ham Radio Deluxe Software, Ham Radio Outlet, Heil, ICOM, QSL Concept, Talkpod, & Wireman. Talkpod actually donated six of their model A36Plus dualband HTs. The Talkpod radios are supported by CHIRP for programming.



There were also lots of ham clubs represented with display tables. They included: BARC, BARC Juniors, BCARES (with K0ARK's trailer tower), BATVC, Denver Radio Club, Edge of Space Sciences (with their van), Estes Valley ARC, Longmont ARC, Parker Radio Assoc., Rocky Mountain Ham, & Village 7 ARC.

Once again the Boulder ATV group had an ATV display table setup. It was manned by Jim, KH6HTV, and Don, N0YE. This year, because of the new push towards microwaves for ATV, we decided to emphasize that aspect of ATV. So we had setup a live demo of analog 5.8 GHz, FM-TV in addition to digital 70cm DATV. Don, also brought along his 10 GHz, DVB-T rig. As an attention getter, we had

## Have You Ever Considered Trying MICROWAVE Amateur Radio ?

### 1.2 5.8 & 10 GHz

- Boulder Amateur Television Hams
- Are doing Microwaves on all of these bands
- The wide-area coverage ATV repeater at NCAR supports all of these bands

### \$100 Complete 5.8 GHz ATV System

- FM-TV transmitter & receiver \$30
- TV camera \$20
- Video Monitor \$50

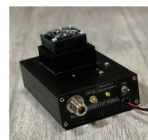


### \$60 to receive 423 MHz NCAR, digital TV output

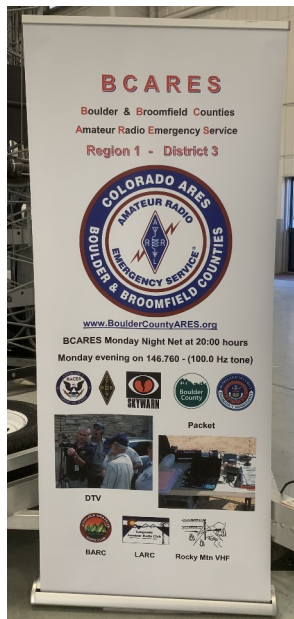


### \$725 to Transmit into ATV Repeater

- \$400 DVB-T Modulator (HDMI in, 0.1-2.5GHz)
- \$325 1.2 GHz, 2 Watt, RF Linear Power Amplifier



a 24" video monitor displaying a brief, 5 slide show (*see above*) emphasizing microwaves and the low cost for analog TV and for a set top box for DATV. We also had a pile of pre-programmed, set-top, 70cm, DVB-T receivers for sale. We sold four of them at the swap-fest.



*BCARES E.C. Allen Bishop, K0ARK, was there with his very impressive trailer mounted, erectable antenna tower and a display of the BCARES' DATV equipment. It generated a lot of interest.*



*Allen's tower with Edge of Space Science's van in background*

## More on HDMI Problems with Hi-Des Receivers:

This past summer, Chris, K0CJG, bought at 1/2 price a used Hi-Des HV-110, DVB-T receiver from a dis-gruntled ham. The ham reported that the HDMI output of the receiver refused to work, but the analog composite video & audio output worked fine. Chris also found that the HDMI didn't work for him. But wait ! Here is a bit of encouraging news we just got from Chris.

"Thought you'd like to know that the HV-110 receiver can in fact reliably feed video/audio through the HDMI port **IF** the HV-110 is booted first and then the monitor is turned on. Any other sequence of plugging in the HDMI cable or cycling the HV-110 or monitor power does not resolve the problem once the HV-110 loses its mind. They must both be off, then power up the HV-110 and wait for boot, then turn on the monitor. Works every time. Go figure...? ? ?

So then I loaded a custom channel table on to a micro SD card and tried to insert it in the HV-110. Didn't push hard enough to engage the retainer. Quickly discovered the tremendous spring action in this port, unlike any other. The card launched >4' away and landed in a pile of papers. Have sifted thru them twice, but can't find it. Ha ha comedy of errors....Good thing they are cheap and I've got a few around here somewhere."

73 de Chris, K0CJG

## ATV News from San Diego:

Mario, KD6ILO, reports on their recent improvements to their impressive ATV rf/optical/internet network in San Diego, California.

San Diego Digital Video Broadcast Society  
Unit 11 Media 2024



OCEANA COASTAL ACCESS TV  
and FM RADIO 88.7

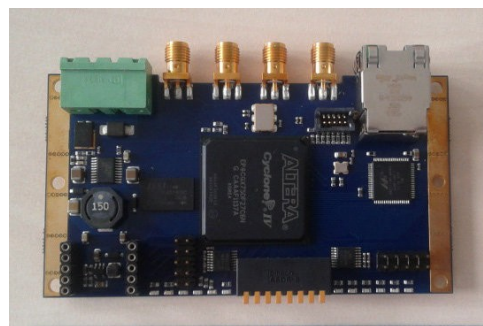
FSOC / RF HUB No. 47188

Our Society will be slowly phasing out our 70cm DVB-T2 and 23cm DVB-S2 RF network as they no longer fulfill our needs. Bandwidth limitations, coordination and spectrum limitations. Our monthly meeting held in our lab in Carlsbad this evening along with our board, technical team and membership representatives to include our STEM affiliates came to an agreement. To upgrade our current network that would fulfill their needs for the next generation without the limitations of RF. As we conduct this Phase transition from RF to Free Space Optical communications fully, IPTV will be our integration with our (8)eight Free Space [laser] Optic Hubs in North/South San Diego Counties. The COTs components for our Optic Transceivers and network are readily available not unlike the current state with DVB components. Updates will be forthcoming. The current backhaul optic network is fully operational.

Oceanside FSOC Hub #3, is now transporting 9.73 Gbps of [Voice, Video & Data] via its LET-Laser Intranet Transceiver gateway, video clear as glass! FSO RoIP works very well with RigNet RF Gateway to ALL Star via the LET Transceiver.

This is part of all of my ITG- FSO Transceiver Units. FPGA in center and is configured for our 1532-60nm network.

Our full transformation of our network from RF to FSO will during the 2025 fiscal year first period. RF use will be limited.



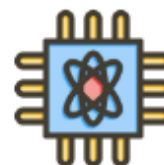
LET-Laser Intranet Transceiver.



FSO-Laser Transceiver  
Oceanside Hub#3



FSO-RigNet-RF Gateway Hub



San Diego DVB Society ITG  
Innovative Technology Group  
Carlsbad / Oceanside, California USA

Will the membership have access to the DVB RF repeater network? Yes they will, all they have to do is turn the port access on, when done, turn the network access off. That is what the very new access FSO-RigNetwork RF Gateway Hubs will do. It will process applications for RF to an optical data stream then convert back to RF. The same for processing RoIP traffic. Note: Access SysOp Net control via RF, FSOC and Verizon 5G. A patent is pending for the design and software applications for the unit as a whole. Cost covered fully by grant R&D funding out of 2023 fiscal year.

Just FYI, we have also tried to integrate the Optical MESH traffic for video , but as soon as it hit the ARDEN network the data stream slowed down to a crawl. We can take traffic from AREDN but that's it. I have to program a special algorithm to the FPGA chip to accommodate the faster data traffic from our Network. We put a fully upgradable FSO Hub/Sat Gateway at our Ramona site, we had to add a new rack mount for the RF-FSO Unit.



SysOp Mgmt Station Hub#3

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## Santa Barbara ATV Repeater Improvements:

Rod, WB9KMO, has reported on current and planned improvements to the Santa Barbara, California ATN-ATV repeater.

"Time to get the new SB Controller on the air! ..... The Mesa, AZ to Santa Barbara VPN is running again. The 224.86 AllStarLink is working..... Plans are to install the new controller at the KTYD site and get 224.86, 1286.15 and AllStarLink 29506 working through it. We also want to link the controller to the ATV repeater so FM audio is on TV and TV audio is on FM. Mike, WA6SVT, will be installing a gain block to increase the 1289.25 ATV power out. He'll also verify that the 2417 MHz link transmitter to Santiago is working and getting through the Santiago controller. [It worked fine when I was there in June, but could use a little more power.] .... I also hope to install a PTZ camera. I'll replace the Grandstreams with SRT streamers if I can."

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## New Mexico High Altitude Rocket (with ATV) Project Update:

Several hams in the Albuquerque, New Mexico have been working for several years now on a large, high altitude rocket project. The hams include: Tony - KD5CRC, Ken - KD5HEH, & Greg - AF5SP. They plan to incorporate digital ATV as part of the rocket's payload. They plan to use DVB-T on the 70cm band. They will be using gear from Hi-Des and KH6HTV Video. Tony has just sent us a brief update.

"Things have been busy, but we just completed a successful recovery system test in Nevada this month, so we can get back to payload development. Here is a short You Tube video:

<https://www.youtube.com/watch?v=dXxzLv8xIqw>

The rocket reached a speed of Mach 3.8 and an altitude of 120,133 feet."

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## ATV News from the North-West

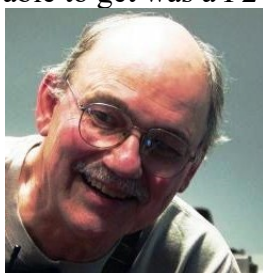
The Western Washington Amateur Television Society ( WWATS ) is presently in the process of transitioning from analog to digital ATV. The key spark plug leading the transition is Wade W7ITL, vice-president of WWATS. Wade is working with many members helping them make the transition in their home stations. He has been making Doctor's house calls even to help with antenna installations and debugging receiver / transmitter issues. One ham recently helped out by Wade was Ron, KD7QKU. Ron reported to your editor that with Wade's able help at his QTH in Tacoma, Washington, 22 miles from the ATV repeater, that he was able to now get a perfect P5 digital ATV picture whereas in the past the best he was ever able to get was a P2 and sometimes marginal P3 analog signal.



Wade, W7ITL, vice-pres



Bob, K9PQ  
president



Lee, N7KC  
secretary



Jim, WU7N  
treas. & trustee



Burt, N7CS  
director



Jessica, KF7UHK  
director

### WWATS Officers

The club's call sign is WW7ATS. Their ATV repeater is located on Cougar mountain on the east side of Seattle. It serves the Puget Sound area. Their repeater is a cross-band repeater with input on 70cm and output on 23cm band. For DTV they are using DVB-T. Their digital input is on 435.5 MHz with horizontal polarization. The repeater's digital output is on 1255.5 MHz with vertical polarization. For home equipment, they are recommending that members use the Hi-Des HV-320 modulator and HV-120 receiver, KH6HTV Video 70-9B, 10 W, 70cm amplifier, a 70cm yagi antenna and Directive Systems 23cm loop yagi antenna with LMR400 or 600 coax cable. The club's web site is:

<https://www.qsl.net/ww7ats/index.html>

### SDR-TV:

Steve, N8GNJ, has sent us this interesting URL about some new software in development. <https://www.sdr-radio.com/sdr-television-sept-19th-2024>

SDR Television is a pure software solution for DVB-S2 H.264 / H.265 / AAC digital television. No hardware such as the MiniTiouner is required, just a SDR such as Pluto or Lime if transmit support is required, otherwise even a RTL SDR suffices. This software is still being developed, tentative preview date before February 2025, official preview April 2025.

The author is Simon Brown, also known as G4ELI, has a background in radio technology and software development. He is known for his work in commercial radio monitoring with software-defined radio (SDR) technology. Simon is the creator of SDR Console and has been involved in various SDR projects. He is also known for his original work on Ham Radio Deluxe and has been active in the radio community for many years. Additionally, he has contributed to the development of radio monitoring and SDR technology through his company SDR-Radio.com Ltd.



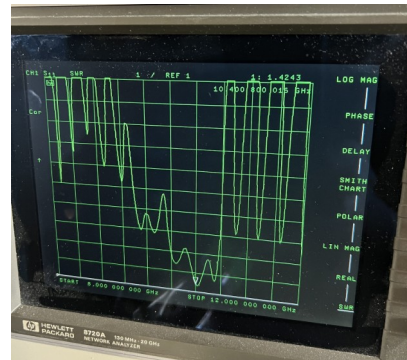
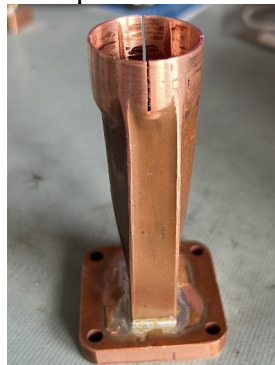
## More 10 GHz ATV News:

Mike, KM7MH, Athol, Idaho, writes us with the following:

"Hello Jim --- Thanks for sharing the news that your club is now on 10Ghz! I hope the band sees continued amateur use well into the future.

Please find the attached photos of my repeater input implementation. The 10.4 GHz antenna is similar in design to yours except using half height waveguide for a low azimuth ripple omni directional pattern. A sliding short was used to achieve best match and then soldered in place. The compact down converter is a modified Bullseye LNB with the horn machined off and connected to a home brew circular to rectangular transition made from reshaped WR-90 waveguide. The LNB feeds a GT Media V7 Pro. The next challenge is determining how to get valid video keying output from the V7 pro, or possibly externally processed. [editor's note: Mike, see my app. note AN-23, "DVB-T Television Repeater", pages 5-6 for discussion on picking off logic level Valid Signal.]

My initial plan is to utilize individual TX-RX antennas with sufficient vertical separation allowing in-band operation with an output in the neighborhood of 10.2 GHz. The ultimate goal is single antenna operation through the use of a duplexer.



## **VersaTune DVB-T/S Receiver Update from WA8RMC:**

Speaking of VersaTune, my new scanning DATV DVB-S / DVB-T receiver project, progress is very slow. Bob and I are still working on it but because of Bob's work schedule, it's hard to spend concentrated time on the software. Hardware wise, I've got a working prototype with a few hand installed jumpers. As soon as I'm comfortable with it not needing added modifications, I'll make the necessary artwork corrections and create a new artwork. Then I'll send it out to have some more prototypes made. At least at this time we now have a working prototype so we're starting to work on the minor bugs. I am presently working to correct the existing PCB drawings and update the schematic so I'll be ready. I've just finished making a new "Net List" which is a 7 page text file of each pcb trace to all components. What a time-consuming pain! I have, what I claim, is a break through on two levels. The first is a problem in the tuner module software interface created by the manufacturer which has a defect in the "signal locked" signal. It gives a false indication of a good signal under some circumstances. They agreed to fix that and are in the process of doing it. We now have revised software from them and are testing it. Second, I found the existence of a new front end receiver chip for the tuner module that gives expanded frequency range for the DVB-S input. With this range, it will be possible to receive DVB-S signals from the Space Station on 2398 MHz as well as the 900 MHz band directly eliminating the need for a downconverter. That new range is 250 MHz to 2550 MHz. I'm working directly with the manufacturer in China on this. They already sent me 20 sample IC's to try. It is a "drop in" replacement hardware wise but needs new software. They provided that but it needs to be merged into our present demodulator software for a complete solution. The 2 China companies are working on the custom solution for us. We are getting closer to producing a complete working product but it is taking much more time than expected. The software is the holdup but hardware is ready. I'm not going to predict when we will be ready for production because there have been too many missed predictions. So, hang in there..... That's all for now. ---- Regards, Art, WA8RMC  
(reprinted from ATCO Newsletter, Oct. 2024, vol. 41, no.4)

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## **NextGen TV --- Deep Concern Over Future of ATSC 3.0**

Pearl TV told a U.S. Court of Appeals this week that it has "deep concern" over the future availability of TV sets and devices that support the ATSC 3.0 standard because of LG's exit from the 3.0 market in the U.S. last year after it lost a court case against Constellation Designs over a patent dispute.

Pearl, a consortium of broadcasters, manufacturers and associations promoting ATSC 3.0 (aka "NextGen TV") told the court that it feared that "other major TV manufacturers will follow LG and pull their products off the market, if the decision on damages from the trial court is allowed to stand." In 2023, LG Electronics, which, along with Samsung, was one of the companies that worked on developing the ATSC 3.0 standard—a next generation broadcast standard that combines traditional broadcast with IP—announced that it would no longer manufacture or sell TV sets that receive NextGen TV in the U.S. because it lost a patent dispute with Constellation Designs. (See TV Tech Magazine 8/26/24 for complete article) -- (reprinted from ATCO Newsletter, Oct. 2024, vol. 41, no.4)

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## ATCO/DARA ATV NET WEDNESDAY NIGHT 8 PM MEETING

Below is a screen shot of the check-ins, Wednesday 10/16/24 on ZOOM. We have a great time talking about ATV related subjects and usually branch off to other topics as well. All are invited and from anywhere on our planet. The NET lasts for no more than an hour. We usually have 10-15 participants.

If you haven't used ZOOM before, click on the link below and follow the prompts.

<https://www.zoom.us/j/9670918666>

Or, click on your ZOOM icon and enter ID: 967 091 8666 & passcode: 191593 to enjoy the fun.

Below are the participants checked in on Wednesday, October 16, 2024. From top to bottom and left to right are:



Bill W8CWM, Dave AH2AR, Dave AH2AR (he checked in twice), Tom N8ZM, Dave KE8DOC, Bruce K8FIX, Vince N3BFZ, Leon N0VWX, Rick WA6NUT, Me WA8RMC (taking picture) Mario N2JWP & Mike WA6SVT

**WOBTB Details:** Inputs: 23 cm Primary (CCARC co-ordinated) + 70 cm & 3 cm secondary all digital using European Broadcast TV standard, DVB-T with standard 6 MHz wide TV channels. Frequencies listed are the center frequency of the TV channel.

23 cm = 1243 MHz (primary), 70 cm = 441 MHz & 3 cm = 10.380 GHz

**Outputs:** 70 cm Primary (CCARC co-ordinated), Channel 57 -- 423 MHz with 6 MHz BW, DVB-T Also, secondary analog, NTSC, FM-TV output on 5.905 GHz (24/7 microwave beacon).

Operational details in AN-51d Technical details in AN-53d. Available at:

<https://kh6htv.com/application-notes/>

**WOBTB ATV Net:** We hold a social ATV net on Thursday afternoon at 3 pm local Mountain time (22:00 UTC). The net typically runs for 1 to 1 1/2 hours. ATV nets are streamed live using the British Amateur TV Club's server, via: <https://batc.org.uk/live/> Select *ab0my* or *n0ye*. We use the Boulder ARES (BCARES) 2 meter FM voice repeater for intercom. 146.760 MHz ( -600 kHz, 100 Hz PL tone required to access).

**Newsletter Details:** This newsletter was started in 2018 and originally published under the title "*Boulder Amateur Television Club - TV Repeater's REPEATER*" Starting with issue #166, July, 2024, we have changed the title to "*Amateur Television Journal*." This reflects the fact that it has grown from being simply a local club's newsletter to become the "de-facto" ATV newsletter for the USA and overseas hams. This is a free ATV newsletter distributed electronically via e-mail to ATV hams. The distribution list has now grown to over 800+, both in the USA and overseas. News and articles from other ATV groups are welcomed. Permission is granted to re-distribute it and also to re-print articles, as long as you acknowledge the source. All past issues are archived at: <https://kh6htv.com/newsletter/>

**ATV HAM ADS -- *Free* advertising space is offered here to ATV hams, ham clubs or ARES groups. List here amateur radio & TV gear**  
***For Sale - or - Want to Buy***



## ITEMS FOR SALE OR GIVEAWAY



**"TALKING" VHF / UHF TW-2  
 WATTMETER**

**DIGITAL VOICE ADAPTER  
 FOR SSB RADIOS**

***Plus many more items listed -- check out their web site***  
***[www.slatsatn.net](http://www.slatsatn.net)***